Commercial Demonstration of the Airborne Process

Project withdrawn

Participant
LG&E Energy Corporation

Additional Team Members
Kentucky Utilities—host

Babcock & Wilcox Company—technology supplier

USFilter—technology supplier

Airborne Pollution Control—technology supplier

Location
Carrollton, Carroll County, Kentucky (LG&E's Ghent Unit No. 2)

Technology
"Airborne Process" integrated environmental control technologies

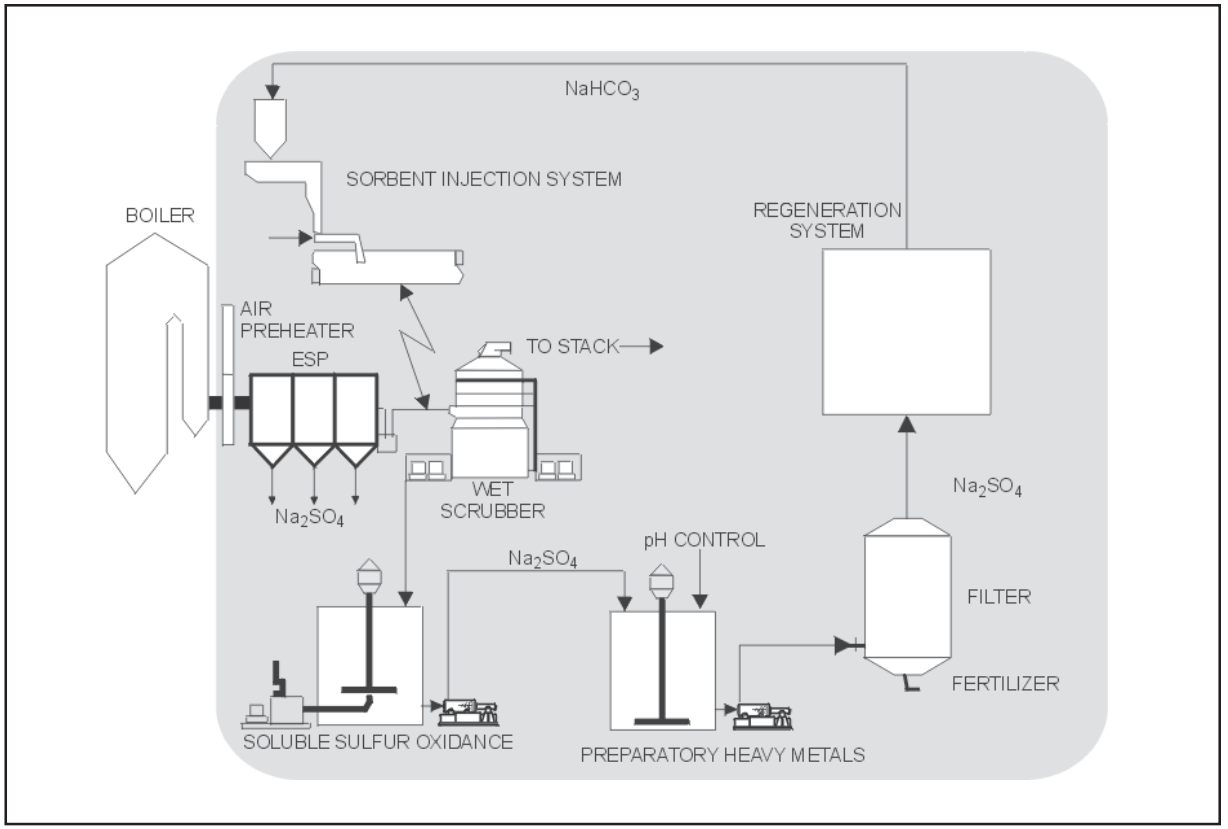
Plant Capacity/Production
524 MW

Coal
Eastern Kentucky Bituminous (3.6% sulfur)

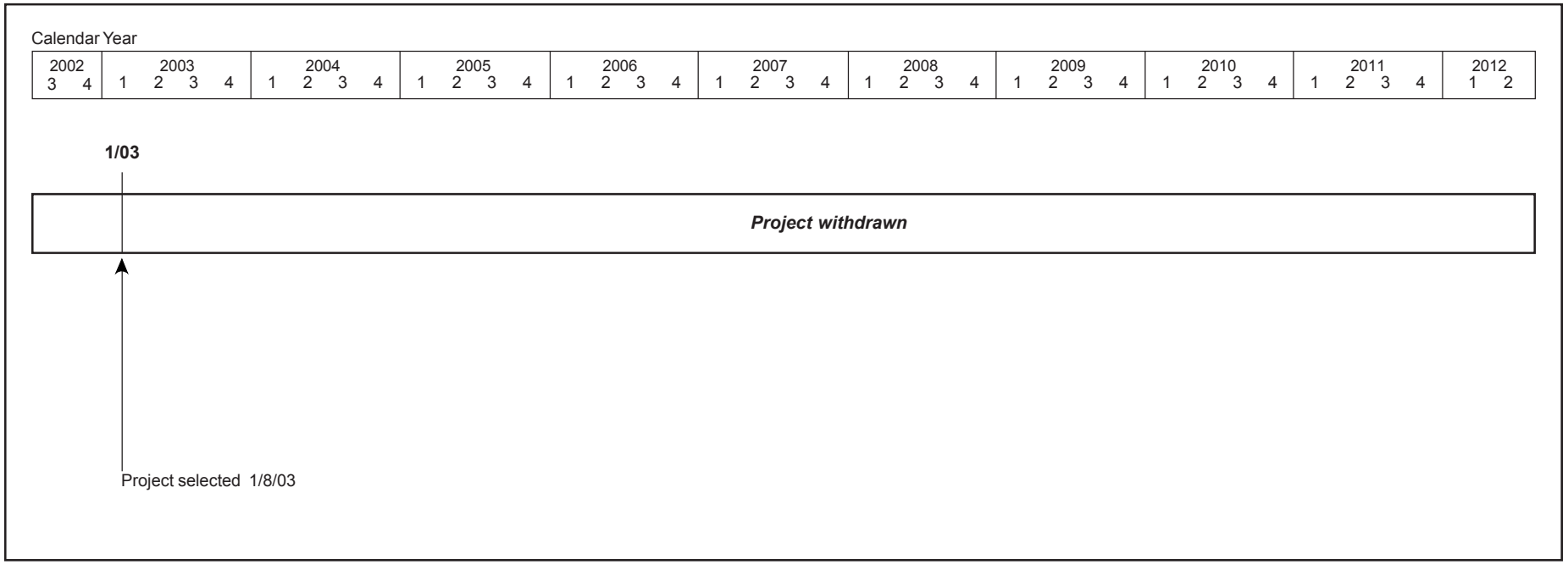
Project Funding

Total	$120,126,569	100%
DOE Share	$ 31,122,268	26
Participant	$ 89,004,301	74

Project Objective
To demonstrate cost-effective, advanced emission control technologies integrated with existing emissions control equipment for multi-pollutant emissions abatement while providing a highly desired, valuable fertilizer by-product. The goal of the "Airborne Process" is to remove 99.5% of the sulfur dioxide (SO_2), 90% of the sulfur trioxide (SO_3), 90% of the nitrogen oxides (NO_x), and 90% of the mercury (Hg) across the total system, while turning the by-products into a high-quality, valuable granular fertilizer that will produce a revenue stream while yielding stack emissions that will be lower than other coal-fired units currently in service.



Technology/Project Description
The Airborne Process employs a proprietary method of sodium bicarbonate ($NaHCO_3$) regeneration. The sodium sulfate (Na_2SO_4) by-product (the end product after scrubbing of flue gas emissions has occurred) is regenerated into two end products. The first product is sodium bicarbonate for re-use in the scrubbing process, with the second being fertilizer which can be sold, therefore eliminating disposal costs and producing a revenue source.



Project Status/Accomplishments

The project was selected for award on January 8, 2003 and the cooperative agreement was under negotiation. However, LG&E Energy Corporation decided to withdraw the project.

LG&E Energy was to host this project as well as serve as the prime contractor. The Babcock & Wilcox Company (B&W), USFilter, and Airborne Pollution Control were to provide the technical and project management resources throughout the four-year project, including design, installation, start-up and testing. Airborne Pollution Control holds the patents for the granulation process. B&W, USFilter, and Airborne Pollution Control were to provide the hardware for the dry sorbent injection and sodium-based scrubbing system, regeneration system, and fertilizer production system respectively.

Installation and start-up was to be followed by a three-month field test phase. This test program was to focus on multi-pollution emission reductions and production of the valuable fertilizer. The test program was also supposed to demonstrate the availability of the Airborne Process with the objective of achieving a commercial level of availability beginning with the first year of commercial operation.

Commercial Applications

The Airborne Process can be widely applied in the near-term to satisfy the emissions reduction needs for retrofits into existing plants that are currently unscrubbed as well as for new coal-based installations. Compared to other cleaning solutions, this regeneration process reduces operating costs, reduces waste, eliminates landfill use and generates a profit for the utility. A patented granulation process is the method by which the ammonium sulfate by-product is turned into a high-quality fertilizer.